

and Alabama. All passed off without damage of consequence. Little planting had been done, and the rivers of the Santee system had been high for so long a period that there was no livestock in the swamp regions.

The Tombigbee River at Demopolis, Ala., was in flood from April 14 to 27, inclusive, with crests on April 16 and 24 of 42.9 and 48.2 feet, respectively, flood stage being at 39 feet. The Tombigbee River was also in flood on April 18 and 19, with a crest stage of 52.7 feet at 10 a. m., April 19, or 6.7 feet above the flood stage. Damage as reported amounted to \$15,500. Value of property saved through warnings, \$11,900.

The heavy rains of April 10-11 over the drainage area of the Pearl River of Mississippi resulted in a somewhat prolonged period of moderately high water. Warnings were timely and no damage was reported.

The Illinois River had been high throughout March and remained generally so during April. Some additional warnings were necessary and they were well verified. No damage of consequence occurred.

The following description of a flood in the Belle Fourche River of South Dakota was prepared by Mr. Harley N. Johnson, meteorologist in charge of the Weather Bureau Office at Rapid City, S. Dak.:

#### FLOOD WATERS IN THE BELLE FOURCHE RIVER, WESTERN SOUTH DAKOTA

Due to moderately high temperatures and warm showers, a heavy blanket of snow approximately 5 feet deep overlying the headwaters of the Belle Fourche River near Moorcroft and Gillette, Wyo., melted rapidly and caused the highest water in the Belle Fourche River known to the oldest inhabitants. The highest stage of water was approximately 3 feet above any previous high-water mark. The water, already high, began rising further on Sunday, April 6, and reached the maximum stage at Belle Fourche about noon, Wednesday, April 9. Ample warnings of the approach of the flood were given to the people living on the lowlands, which was no doubt responsible for no lives being lost. Fifty-five families were rendered homeless, a total of 168 people, and property loss or damage is estimated from \$125,000 to \$150,000. Practically all the furniture in the 55 homes inundated is a total loss. The water reached the main street of the city of Belle Fourche and many residences and business houses had water in the basements. The Wood Lumber Co. lost heavily by its finished product being washed away, and the burning of its mill, which was washed from its foundation and lodged against the bridge. To prevent the possible going out of the bridge by reason of the resulting jam the lumber was removed from the mill and the mill then fired.

About 50 feet of the railroad bridge north of the town was washed away and the approaches to the new steel bridge were damaged and the bridge itself was saved only after a hard struggle. The steel and wood bridge east of the Powers Garage had to be dynamited to break up a jam, and the bridge across Redwater Creek near the high school was washed away. Ranches all along the valley of the Belle Fourche were heavily damaged by the flood waters.

Relief work by the Red Cross, whose representatives arrived at Belle Fourche on Saturday, April 12, did much to alleviate the suffering of the homeless people.

Two men lost their lives near Dazell, in Meade County, on Wednesday, April 2, while attempting to cross the Belle Fourche River in a ferryboat. The cable gave way under the strain of the high water, and the men, Peter Richards and John Newcombe, were swept down the swollen stream. Only one of the bodies has been recovered to date, and it was washed ashore 5 miles downstream from the place where the men were drowned.

Very heavy rains on April 29 over the lower Arkansas Valley caused a decided rise in the Arkansas River and its tributaries, except the Canadian, and the rise was still in progress at the close of the month. It will be described briefly in the MONTHLY WEATHER REVIEW for May, 1924.

A rise to 5.5 feet in the North Platte River at North Platte, Nebr., or 0.5 foot above the flood stage, on April 18-19 was doubtless due to heavy rains and some melting snows at headwaters in the State of Wyoming. No damage was done.

The lower Trinity River of Texas was in flood or rising rapidly at the close of the month of March, and the crest

did not pass Liberty, Tex., until April 11. The flood was moderate and no material damage resulted. Another marked rise set in below Fort Worth after the heavy and general rains of April 26-27, and the high water continued at the end of the month. At Dallas, Tex., the estimated crest stage of 31 feet on April 28 was 6 feet above the flood stage. Further details will be given in the MONTHLY WEATHER REVIEW for May, 1924.

The melting of unusually heavy snowfall over the upper drainage area of the Rio Grande and the Colorado River caused exceptionally early rises in the rivers, and flood warnings for the Rio Grande in the State of New Mexico were issued beginning with April 7. The river at Albuquerque did not quite reach the flood stage of 4 feet, but below that place the river was in flood from April 7 until after the close of the month. Fortunately no damage was done, although a serious situation prevailed at San Marcial, N. Mex., where Mr. George W. King, the river observer, reported: "The water level during the last rise (April 27-29) was easily 6 feet above the level of the town and our dikes are none too strong." Warnings were also issued for the lower Colorado River and flood stages were slightly exceeded in some localities.

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC DRAINAGE					
Connecticut:	<i>Feet</i>			<i>Feet</i>	
White River Junction, Vt.	15	20	20	15.7	20
		8	12	20.7	8
Hartford, Conn.	16	16	16	16.2	16
		20	25	17.7	21
Hudson:					
Troy, N. Y.	15	7	8	20.3	8
Albany, N. Y.	12	7	8	14.6	8
Susquehanna:					
Binghamton, N. Y.	14	7	8	15.2	7
Towanda, Pa.	16	7	7	17.8	7
Wilkes-Barre, Pa.	20	7	8	23.5	8
Harrisburg, Pa.	17	8	8	17.0	8
Unadilla:					
New Berlin, N. Y.	8	6	10	11.8	7
Chenango:					
Sherburne, N. Y.	8	7	8	9.3	7
Cape Fear:					
Elizabethtown, N. C.	22	14	14	22.4	14
Peedee:					
Mars Bluff, S. C.	17	17	24	18.8	16
Santee:					
Rimini, S. C.	12	5	28	15.3	10
Ferguson, S. C.	12	( <sup>1</sup> )	5	13.8	11
Saluda:					
Felzer, S. C.	7	30	( <sup>2</sup> )		
Chappells, S. C.	14	6	6	15.5	6
EAST GULF DRAINAGE					
Apalachicola:					
River Junction, Fla.	15	22	22	15.1	22
Coosa:					
Gadsden, Ala.	22	20	22	22.4	20
Lock No. 4, Lincoln, Ala.	17	20	23	17.5	21
Tombigbee:					
Lock No. 4, Demopolis, Ala.	39	14	27	48.2	24
Black Warrior:					
Lock No. 10, Tuscaloosa, Ala.	46	19	21	52.7	19
Pearl:					
Jackson, Miss.	20	14	( <sup>2</sup> )	25.4	22
GREAT LAKES DRAINAGE					
Maumee:					
Fort Wayne, Ind.	15	( <sup>1</sup> )	3		
Napoleon, Ohio	10	( <sup>1</sup> )	1		
St. Joseph:					
Montpelier, Ohio	10	( <sup>1</sup> )	1		
Auglaize:					
Defiance, Ohio	10	( <sup>1</sup> )	1		
MISSISSIPPI DRAINAGE					
Ohio:	<i>Feet</i>			<i>Feet</i>	
Pittsburgh, Pa.	22	( <sup>1</sup> )	1		
Dam No. 6, Beaver, Pa.	30	( <sup>1</sup> )	( <sup>2</sup> )		
Dam No. 12, Wheeling, W. Va.	36	( <sup>1</sup> )	( <sup>3</sup> )		
Marletta, Ohio	33	( <sup>1</sup> )	2	39.1	1
Parkersburg, W. Va.	36	( <sup>1</sup> )	2	40.2	1
Dam No. 19, Tallman, W. Va.	39	( <sup>1</sup> )	2	40.7	1
Dam No. 22, W. Va.	42	( <sup>1</sup> )	2	44.0	1
Point Pleasant, W. Va.	40	( <sup>1</sup> )	3	44.5	2
Dam No. 29, Normal, Ky.	50	2	3	50.5	2
Portsmouth, Ohio	50	2	3	50.8	2
Cloverport, Ky.	40	5	7	40.7	6
Evansville, Ind.	35	3	10	38.3	7
Henderson, Ky.	33	4	10	36.1	7.8
Dam No. 48, Cypress, Ind.	42	4	10	45.7	8
Mount Vernon, Ind.	35	5	11	37.6	8
Shawneetown, Ill.	35	5	12	39.1	8

<sup>1</sup>Continued from last month.

<sup>2</sup>Continued at end of month.

<sup>3</sup>Below flood stage at 8 a. m. April 1.

## EFFECT OF WEATHER ON CROPS AND FARM OPERATIONS, APRIL, 1924

By J. B. KINCER

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
MISSISSIPPI DRAINAGE—continued					
Muskingum:	Feet			Feet	
Marietta, Ohio.....	36	(1)	2	40.4	1
Tuscarawas:					
Coshocton, Ohio.....	8	(1)	1		
Gnadenhutten, Ohio.....	10	(1)	2	13.1	Mar. 31
Scioto:					
Chillicothe, Ohio.....	16	(1)	1		
Wabash:					
Lafayette, Ind.....	11	(1)	4	21.2	Mar. 31
Terre Haute, Ind.....	16	(1)	29	11.3	29
Vincennes, Ind.....	14	(1)	6	20.0	2
Mount Carmel, Ill.....	16	2	10	18.6	6
		1	10	21.6	7
White:					
Decker, Ind.....	18	5	7	19.5	6
White, East Fork:					
Seymour, Ind.....	10	(1)	1	11.0	1
White, West Fork:					
Elliston, Ind.....	19	(1)	4	23.9	3
Edwardsport, Ind.....	14	(1)	6	18.6	3, 4
French Broad:					
Penrose, N. C.....	13	19	19	13.6	19
Wisconsin:					
Knowlton, Wis.....	12	17	19	14.8	18
		27	27	12.5	27
Illinois:					
Morris, Ill.....	13	(1)	5	15.8	Mar. 31
Peru, Ill.....	14	(1)	28	19.5	3
Henry, Ill.....	7	(1)	(2)	13.5	5
Peoria, Ill.....	16	(1)	26	20.1	6
Havana, Ill.....	14	(1)	24	16.5	7-9
Beardstown, Ill.....	12	(1)	(2)	17.6	9
Pearl, Ill.....	12	1	21	14.0	10-12
Meramec:					
Pacific, Mo.....	11	11	11	11.9	11
Valley Park, Mo.....	14	11	11	11.0	11
Arkansas:					
Wichita, Kans.....	9	30	(2)		
Little Arkansas:					
Sedgwick, Kans.....	18	29	(2)	22.7	29
Petit Jean:					
Danville, Ark.....	20	30	(2)		
North Platte:					
North Platte, Neb.....	5	19	21	5.5	19
		24	26	5.0	24-26
		29	29	5.2	29
Grand:					
Chillicothe, Mo.....	18	(1)	(2)	21.3	Mar. 31
Brunswick, Mo.....	10	16	19	10.3	17, 18
WEST GULF DRAINAGE					
Trinity:					
Dallas, Tex.....	25	27	(2)	31.0	28
Long Lake, Tex.....	40	(1)	3	40.4	2
Liberty.....	25	10	13	25.2	13
Rio Grande:					
San Marcial, N. Mex.....	2	1	1	2.0	1
		7	(1)	4.1	27-29
COLORADO DRAINAGE					
Colorado:					
Lees Ferry, Ariz.....	12	12	19	12.8	18
Parker, Ariz.....	7	15	25	7.5	20, 22
		29	30	7.0	29, 30

1 Continued from last month.  
2 Continued at end of month.

3 Below flood stage 8 a. m., April 1.  
4 Estimated.

## MEAN LAKE LEVELS DURING APRIL, 1924

By UNITED STATES LAKE SURVEY

(Detroit, Mich., May 5, 1924)

The following data are reported in the "Notice to Mariners" of the above date:

Data	Lakes <sup>1</sup>			
	Superior	Michigan and Huron	Erie	Ontario
Mean level during April, 1924:				
Above mean sea level at New York.....	Feet 601.02	Feet 578.87	Feet 571.77	Feet 245.36
Above or below—				
Mean stage of March, 1924.....	-0.05	+0.18	+0.51	+0.48
Mean stage of April, 1923.....	-0.37	-0.33	+0.28	+0.03
Average stage for April last 10 years.....	-0.77	-1.40	-0.45	-0.78
Highest recorded April stage.....	-1.67	-4.36	-2.41	-3.07
Lowest recorded April stage.....	+0.48	-0.33	+0.51	+0.52
Average relation of the April level to:				
March level.....		+0.3	+0.6	+0.7
May level.....		-0.3	-0.4	-0.3

<sup>1</sup> Lake St. Clair's level: In April, 1924, 574.15 feet.

The weather during April was somewhat more favorable for agricultural interests than that for the preceding month, although the season continued considerably late in practically all sections east of the Mississippi River, and the frequent rains were unfavorable for field operations in the more eastern States. There was in general sufficient soil moisture in the central and eastern portions of the country, although part of the month was too dry in the region between the upper Mississippi Valley and the Rocky Mountains; rains in this section, however, improved conditions during the latter part of the month. But little rain fell west of the Rocky Mountains, and drought had become severe in much of that area at the close of the month, while frost damage to fruit was rather extensive, especially in the eastern portions of the North Pacific States.

Winter wheat made satisfactory progress during the month in the Ohio Valley States, except those portions where there was heavy winterkilling, while good wheat-growing weather was the rule in the trans-Mississippi States. Wheat plants were jointing as far north as southeastern Kansas at the close of the month. In the more northwestern States, and in California, the continued dry weather was decidedly unfavorable for wheat and other fall-sown grains. Conditions were rather favorable for seeding spring wheat, and this crop had been largely sown at the close of the month, while satisfactory germination of the early-sown grain was reported.

Much corn ground was prepared for seeding in the upper Mississippi and Ohio Valleys, but little had been seeded at the close of the month, though planting was general in Missouri, and was well along in the southern half of Kansas. Early-planted corn germinated satisfactorily in southern portions of the belt, while the crop did fairly well in the more southern States, although it was rather too cool in the south Atlantic area. In general the weather was favorable for cotton planting and this work was extended to the northern portions of the belt in all sections, though the latter part of the month was too cool and wet in many northern cotton districts. Most of the crop was seeded in the central and southern portions of the east Gulf States and planting was well along in Tennessee, with chopping progressing in the southern parts of Alabama and Georgia. The nights were too cool, however, the latter part of the month for best germination and growth of cotton in the eastern portions of the belt.

Potatoes did well under favorable conditions for this crop in the Southeastern States, though growth was rather slow; the weather was unfavorable for planting potatoes in the middle Atlantic coast sections. Melons were backward and mostly poor in Florida, but tomatoes made good advance, with shipments in progress from the southern portions of the State. The warmer weather early in the month cleared the snow from most of the winter ranges in the Rocky Mountain districts and conditions were generally favorable for stock interests from that area eastward. Ranges were unfavorably affected by the dry weather in the more western States.